

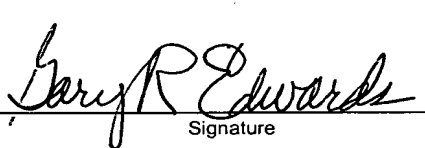


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PTO/SB/33 (07-05)  
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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 1748X/49969	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]  on _____  Signature _____  Typed or printed name _____	Application Number 09/863,872	Filed May 24, 2001	
	First Named Inventor Stefan BONEBERG		
	Art Unit 1764	Examiner Thanh P. Duong	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p>			
I am the <input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) <input checked="" type="checkbox"/> attorney or agent of record. 31,824 Registration number _____		 Signature Gary R. Edwards Typed or printed name 202-624-2500 Telephone number December 13, 2005 Date	
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____			
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			

<input type="checkbox"/> *Total of _____ forms are submitted.
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This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Attorney Docket No. 1748X/49969

**STATEMENT OF REASONS**  
**FOR REVERSAL PRIOR TO APPEAL**

This statement is submitted in support of Applicants' Pre-Appeal Brief Request for Review (PTO/SB33) filed herewith. Claims 1 through 13 are currently pending in this application. Of these, Claims 2 and 13 have been objected to as being dependent upon a rejected based claim, but would be allowable if rewritten in independent form, as indicated at page 6 of the final Office Action dated July 13, 2005. Claims 1 and 3-12, on the other hand, have been rejected under 35 U.S.C. § 103(a) as unpatentable over Benz et al (U.S. Patent No. 6,186,066) in view of European patent application EP 0 968 958 A1. However, for the reasons summarized briefly below, Applicants respectfully submit that each of Claims 1 and 3 through 12 distinguishes over both Benz et al and EP '958, whether considered separately or together.

The present invention is directed to a method of operating a gas generating device. In particular, it provides a manner of operation which achieves improved cold starting properties. (That is, the device is quickly brought to an operating temperature at which it achieves its full capability for generating hydrogen gas.) For this purpose, the gas generating system includes at least two gas generating units, which are arranged sequentially in a gas flow path. During a starting operation, only the upstream gas generation unit is heated (by an external source), so that only that gas generation unit is operated. In order to hasten the heating of the first gas generation unit, during the starting phase, it is operated with a power, and/or at a temperature, that exceeds the rated power of the unit.

The Benz *et al.* reference differs from the present invention in the following particulars:

- (1) it does not disclose a method of operating a gas generating unit; and
- (2) it does not provide that one of two gas generation units is operated during a cold start with a power output which exceeds its rated power.

#### Gas Generation versus Heater

Gas generation, such as referred to in the present application (for example, a “reforming reaction”), is endothermic. It does not constitute, and is not functionally equivalent to, “combustion”, and requires a source of heat in order to sustain it. Such heat may be supplied by an electric source, by combustion or in any other manner.

The Benz *et al.* reference is directed to a device for providing heat energy -- that is, a “heater.” The specification confirms this point at numerous places. Thus, for example, the Abstract indicates that it is a “device for providing heating energy to a gas-generating system.” (It is apparent, of course, that there is a difference between such a device for providing heat, typified by Benz *et al.*, and the gas-generating system itself, such as that of the present invention.) See also, Column 1, lines 6-7, and Column 2, lines 40-41. Accordingly, each of the three components 2-4 in Figure 1 (for example) of Benz *et al* constitutes a “combustion chamber”. (See Column 2, lines 45 and 63; Column 3, lines 2-3 and 14-16.) The manifest purpose of such combustion is to generate heat.

In response to the above summarized matters, the Advisory Action states (on the continuation page) that the claims of the present application do not distinguish over Benz *et al* because:

1. Benz *et al* discloses a device for generating hydrogen; and

2. Hydrogen is a source of heat energy.

Applicants respectfully submit, however, that the first of these two propositions is incorrect, and that the second is irrelevant. In particular, the specification at Column 1, lines 6-9 of Benz et al, referred to in the Office Action clearly belies the notion that Benz et al discloses a method of operating a gas generation device, stating that “the invention relates to a device for providing heat energy for a gas generating system....” It thus clearly differs from the gas generating system itself, for which heat is to be provided.

The proposition, on the other hand, that hydrogen gas can be a source of heat energy, has no bearing on the claims of the present application, which are directed to a method of operating a gas generating system. In contrast to the present application, Benz *et al* is directed to a device which consumes fuel (for example, hydrogen) in order to generate heat. For this purpose, as described at Column 2, line 40 through Column 3, line 34, a mixture of fuel and oxygen is passed through a series of combustion chambers contained in components 2-4 where it is catalytically reacted to generated heat. “The completely oxidized fuel-air mixture is finally discharged into the environment through the second line 6.” Benz *et al* clearly does not disclose a method of operating a gas generator.

Operation at a Power Level above Rated Power

Claim 1 also recites that during a starting phase of the gas generation device, only the first of two gas generation units is operated, with a power that exceeds the

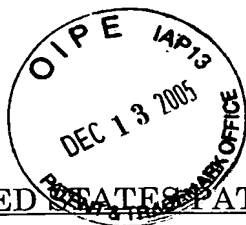
rated power of the unit  $P_{\text{rated}_1}$ . This feature of the invention is also neither taught nor suggested, nor even addressed, in Benz et al.

As is known to those skilled in the art, the capacity of a given gas generation unit to produce hydrogen gas (referred to as its “power” output) increases with its operating temperature, and the actual instantaneous power output at a given temperature is a function at the rate at which fuel is supplied (until, of course, the fuel supply exceeds the capacity of the unit). The specification of the present application defines the “rated power” of a gas generator as the amount of hydrogen gas that it is capable of producing “during prolonged operation at full load.” See paragraph [0022]. Those skilled in the art will, of course, understand that the rated power of a gas generator is a function of its composition and structure, and that, for a particular gas generator, its “rated power” will have a corresponding rated temperature -- being the temperature at which the “rated power” is achieved.

It is, of course, apparent that a particular gas generator may be operated for short periods of time at a power output that it is incapable of sustaining over a prolonged period without incurring damage or deterioration -- that is, a power output that exceeds its “rated power.” Such “overload” operation (paragraph [0024], lines 9-10) results in rapid heating of the gas generator unit. The present invention takes advantage of this phenomenon in order to provide an overall gas-generating system that is capable of rapidly achieving an operating temperature. The penultimate paragraph in both claims 1 and 12 recites this feature of the invention. Claim 1 states, for example, that “during a starting phase of the gas generation device, ...only the first gas

generation unit [is operated], with a power  $P_{\text{start}_1} > P_{\text{rated}_1}$  or at an operating temperature  $T_{\text{start}_1} > T_{\text{rated}_1}$ .”

The disclosure in Benz *et al.* at column 4, lines 1-4, does not teach this aspect of the invention. Rather, it simply notes that after the system has warmed up, the cold start component 3 is not operated at all (no fuel/air mixture is conducted through it). Since the output of the cold start unit during normal operation is thus zero, it follows that any level of operation during cold starting exceeds the actual level at which the cold start unit is operated (zero) when the system has been warmed up. This proposition is quite different, however, from stating that during cold starting, the cold start component 3 is operated “above its rated power,” as defined in paragraph [0022]. Stated in other words, the fact that the cold start unit 3 is operated at zero power output during warmed up operation of the overall system, does not mean that its rated power is zero, which is the tacit premise of the statement set forth at the top of page 7 of the Office Action. Nothing contained in EP ‘958 suggests such “overload” operation, or a modification of Benz *et al.*, which would replicate the present invention. Accordingly, for the reasons set forth above, Applicants respectfully submit that both of claims 1 and 12, and therefore all claims which remain of record, distinguish over the Benz *et al.* and EP ‘958 references.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 09/863,872 Confirmation No. : 9481  
First Named Inventor : Stefan BONEBERG  
Filed : May 24, 2001  
TC/A.U. : 1764  
Examiner : Thanh P. Duong  
  
Docket No. : 1748X/49969  
Customer No. : 23911  
  
Title : Method for Operating a Gas Generation Device in a  
Fuel Cell System

**REQUEST FOR RECONSIDERATION**

**Mail Stop Appeal Brief**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**December 13, 2005**


Sir:

The Advisory Action mailed November 4, 2005 indicates that the amendment submitted October 7, 2005 will not be entered for purposes of appeal. However, the single revision made by this amendment is the correction of what is clearly a typographic error in Claim 12, in which the word "unit" was omitted following the phrase "first gas generation" in the penultimate paragraph. This change merely makes the language of that paragraph consistent with the language of the first paragraph which refers to "said first gas generation unit", a phrase which appears throughout the claims. Accordingly, Applicants respectfully submit that it does not require further search or consideration, and does not modify the scope of the claims. Therefore, Applicants respectfully request that the amendment be entered for the purpose of appeal.

If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 102063.49969).

Respectfully submitted,

  
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